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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,455	07/29/2003	Hidefumi Abe	030921	4836
38834	7590	04/19/2005	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			MILLER, PATRICK L	
			ART UNIT	PAPER NUMBER
			2837	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,455

Applicant(s)

ABE ET AL.

Examiner

Patrick Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8-11, 13, 14 and 16 is/are rejected.
- 7) ☒ Claim(s) 4, 7, 12, 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 5, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knab et al. (5,777,446) in view of Popat (5,760,558).
 - With respect to claims 1 and 9, Knab et al. disclose a positioning apparatus comprising: an electric motor (Fig. 1, #12); a positioning mechanism to position a movable member within a predetermined range (Fig. 1, #20 is positioned between #s 26 and 28); a motor control circuit to rotate the motor by supplying a driving pulse (Fig. 1, #34); the motor control circuit comprises: a drive generating means (Fig. 1, #34); a present stage number detecting means that receives an output signal from at least one magneto-sensitive device (Fig. 1, #40 receives position signal from #38); and an initialization means that moves the movable member to at least a forward traveling limit or a backward traveling limit within the movable range, so as to set the rotor present stage number as either a forward traveling limit stage number or a backward traveling stage number (col. 3, ll. 25-62; when the counter indicates that the moving part is at the abutment); and a speed reduction means to reduce a rotating speed of the motor by reducing power of the driving pulse when the rotor present stage is equal to the forward traveling limit stage (col. 3, ll. 8-24;

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when output of #38 indicates that the moving part is at the limit, the motor is stopped; i.e., the motor speed is reduced to zero by reducing to zero the driving signal).

- Knab et al. do not disclose the motor being a brushless motor and the control circuit including a driving pulse generating means.
- Popat discloses a brushless motor that is used to drive a member between two end positions (Fig. 2A, #43; col. 24, ll. 23). Furthermore, Popat discloses a control bridge that controls driving pulses to the motor (Fig. 2A, #42; col. 23/24, ll. 62-67/1-2). The motivation to implement a control bridge that supplies pulses to the motor is so the motor can be driven in forward and reverse directions in a more efficient manner because drive pulses are more efficient than a constant driving signal.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the motor in the system of Knab et al. would be a brushless motor and furthermore, that the control circuit of Knab et al. would supply drive pulses to the motor, thereby providing the advantage of driving the motor more efficiently than when using a constant driving signal, as taught by Popat.
- With respect to claims 2 and 10, Knab et al. disclose reducing the speed of the motor to zero by reducing to zero the drive current when the present stage number is equal to a stage number that is less than the forward limit (col. 3, ll. 51-62).
- With respect to claims 5 and 13, Knab et al. disclose a sensor that produces a signal with each revolution of the drive shaft, which is interpreted to be a Hall sensor (col. 3, ll. 15-18).

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2. Claims 3, 6, 8, 11, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knab et al. in view of Popat as applied to claims 1 and 9 above, and further in view of Hill (5,872,434).

- Knab et al. and Popat do not disclose the speed reduction means issues a command to reduce the duty ratio of the pulses (claims 3 and 11); at least three magneto-sensitive devices (claims 6 and 14); and the stage number increments when the rotor turns through sixty degrees (claims 8 and 16).
- With respect to claims 3 and 11, Hill discloses a speed reduction means that reduces the duty ratio of the pulses supplied to a brushless dc motor when a control system has determined that the movable member is at a desired set-point (cols. 9/10, ll. 29-34/23-32). The motivation to reduce the duty ratio is provide the advantage of stopping and holding the actuator at the desired position. With respect to claims 6 and 14, Hill discloses a motor control system for a brushless dc motor that uses three magneto-sensitive devices (Fig. 2, #s 48A-C). The motivation to use three magneto-sensitive devices is to more accurately detect motor position (col. 5, ll. 8-19). With respect to claims 8 and 16, Hill discloses three magneto-sensitive devices that are spaced 60 degrees apart (Fig. 2, #s 48A-C; col. 8, ll. 11-24; 180 degrees divided by 3 sensors equals 60 degrees apart). Because the magneto-sensitive devices are 60 degrees apart, this means that the counter would increment when the motor rotor turns 60 degrees. This provides the advantage of more precise positioning.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the system of Knab et al. and Popat so that the speed reduction

means reduces the duty ratio of the pulse widths supplied to the motor, which provides the advantage of stopping and holding the actuator at the desired position, as taught by Hill. Additionally, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the system of Knab et al. and Popat so that it has three magneto-sensitive devices that are spaced apart by sixty degrees, thus making the count value in Knab et al. and Popat increment when the rotor turns through sixty degrees. This would provide the advantage of allowing the Knab et al. and Popat system to more precisely position the movable member, as taught by Hill.

Allowable Subject Matter

3. Claims 4, 7, 12, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - With respect to claims 4 and 12, the Prior Art discloses three-magneto sensitive devices, but does not disclose three such devices that are used to determine six control stage numbers for the rotor present stage number.
 - With respect to claims 7 and 15, the Prior Art does not disclose the limitations of claims 1 and 9, respectively, where the movable member is a gear ratio determining member of an automatic transmission of a vehicle.

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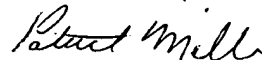
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick Miller
Examiner
Art Unit 2837

pm
April 16, 2005



DAVID MARTIN
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